



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

NOTES ON THE BREEDING HABITS OF THE AMERICAN GOLDEN-EYED DUCK OR WHISTLER
(*CLANGULA CLANGULA AMERICANA*).

BY WILLIAM BREWSTER.

Plates VI and VII.

In 1897 I spent the last two weeks of May and nearly the whole of June at Lake Umbagog, living in a house-boat and devoting my time to studying and photographing birds and nests. Besides a cook and a man to manage the boat, I had with me two assistants, Mr. R. A. Gilbert, who helped me in various ways, and Mr. Clarence H. Watrous, a keen and persistent nest-hunter, to whose tireless efforts I was indebted for the subjects of some of my best notes and pictures. Our floating house proved admirably adapted to the purposes of such a trip, having, in addition to comfortable living and sleeping accommodations, a small but well arranged dark room in which the negatives were developed. By sculling when the weather was calm, with the aid of a sail when there was a favoring breeze, we were able to change our ground whenever we wished to do so, although we often found it profitable to spend several days, and occasionally as much as a week, in one place, moored to the shore at the head of some sheltered cove, where the songs of shy forest birds rose on every side, and the delicious scent of the balsams stole in through the open cabin windows, or riding at anchor sufficiently far out in the lake to escape the black flies and mosquitoes. Our daily excursions were made chiefly by water in canoes, and extended not only to every part of the lake, but for considerable distances up the rivers which flow into it. Altogether it was a delightful experience, full of interest, and not wanting in novelty, despite the fact that the region was one with which I had long been familiar.

During this season I learned much that was new to me concerning the breeding habits of the Golden-eyed Duck or Whistler. This species still nests abundantly at Umbagog, especially about the outlet and throughout the bottom lands of the Lower Megalloway River, where the forests were killed half a century ago by

the back water from the dam at Errol. Many of the trees have fallen or been cut away by the lumbermen within recent years, but enough remain to furnish nesting places for numerous Tree Swallows, Bronzed Grackles, Woodpeckers, and Whistlers, besides a few Wood Ducks, Hooded Mergansers, and an occasional pair of Goosanders.

All the Whistlers' nests which I have examined have been placed over water at heights varying from six or eight to fifty or sixty feet and in cavities in the trunks of large hard wood trees such as elms, maples, and yellow or canoe birches. As the supply of such cavities is limited, even where dead or decaying trees abound, and as the birds have no means of enlarging or otherwise improving them they are not fastidious in their choice, but readily make use of any opening which can be made to serve their purpose. Thus it happens that the nest is sometimes placed at the bottom of a hollow trunk, six, ten, or even fifteen feet below the hole at which the bird enters, at others on a level with and scarce a foot back from the entrance, which is usually rounded, and from six to fifteen inches in diameter, but occasionally is so small and irregular that the Whistler must have difficulty in forcing its bulky body through. I remember one nest to which the only access was by means of a vertical slit so narrow and jagged that it would barely admit my flattened hand.

The eggs are laid on the rotten wood or whatever other debris there may be at the bottom of the cavity. When the set is complete (never before, so far as I have observed) the bird places under, around, and even over the eggs, down plucked from her breast. The quantity of down varies greatly in different nests. Sometimes there is only a very little about the sides and bottom of the cavity; often the eggs are warmly banked and completely covered with down, while there is usually more or less clinging to the edges of the entrance hole.

The number of eggs in a completed set varies greatly. Occasionally there are but five or six, oftener from eight to ten, not infrequently as many as twelve or fifteen, while I once found nineteen, all of which almost certainly belonged to one bird. It is by no means uncommon, however, for two females to lay in the same nest, and several of the rounded, pure white, thick-shelled



FIG. 1. YOUNG WHISTLER, TWO DAYS OLD.



FIG. 2. NEST WHICH THE YOUNG WHISTLERS WERE SEEN TO LEAVE.

eggs of the Hooded Merganser are sometimes included in a set of the green, thin-shelled eggs of the Whistler. The whole bottom of the nesting cavity, be it large or small, is usually covered with eggs, and they are often piled in two layers or set on end, and packed so closely that it is as difficult to remove the first as to take a book from a tightly filled shelf.

I used to suppose that in the cases of composite sets the labor of hatching the eggs and rearing the young was performed, however unwittingly or unwillingly, solely by the original owner of the nest, or, in other words, that the Ducks which laid in the nests of other birds, whether of their own or of a different species, were simply parasitic, after the manner of the European Cuckoo and certain of the Cowbirds, but in 1897 I obtained evidence which seems to point to a different conclusion, at least as far as the Whistlers are concerned. Most of this evidence, as well as certain other observations on the breeding habits of the Whistler, is contained in the following notes, which I give nearly as I find them in my journal.

May 30. We sailed the house-boat up the Lake to-day and anchored near the edge of the flooded forest at the outlet where we intend spending a week or more. Soon after reaching this place we saw four female Whistlers flying together in a peculiar manner over the trees, now rising high in air, next descending and dashing among the trunks and branches, vibrating their wings rapidly and continuously as in ordinary flight, but describing circles about a remarkably tall stub with a shattered top. Around this they would pass a dozen times or more, gradually drawing nearer until one bird leaving the rest and pitching first downward, then sharply upward, would fly directly toward the stub and try to alight on its jagged top. The attempt usually failed, when the bird, continuing its flight, would disappear among the trees, presently returning to begin circling again; but twice it gained a foothold and remained perched for several seconds, although it had to keep its wings in constant motion to maintain its balance. Sometimes its flight was directed to a point near the top of the tree where there was a round, neat-looking hole, no doubt the entrance to a nest, for we afterward saw two Whistlers emerge from it in quick succession. We thought that all four birds tried in turn either to

alight on the stub or to enter the hole, but as we could not distinguish between them, and as no two made the attempt at the same time, this impression could not be verified. They were silent for the most part, but occasionally one of them would utter a sound not unlike the quack of a Black Duck but shorter and flatter and repeated very rapidly six or eight times.

May 31. In a short, hollow maple trunk where a Whistler nested last year we found this morning a set of eleven eggs, none of which were covered with down although they were evidently near hatching. This nest is within thirty yards of the tall stub about which the four Whistlers were circling yesterday. The entrance is at the top about twelve feet above the water.

June 2. We found a Whistler's nest to-day by watching the female. She first alighted on the water near the tree and for fifteen or twenty minutes swam or drifted idly about preening her feathers. Then she flew out over a space of open water and turned back toward the tree, describing a great loop and rising gradually until she had attained an elevation of about twenty feet when she made directly for the entrance to the nest, which was about thirty feet above the water. On nearing it she pitched up sharply for the remaining ten feet, keeping her wings in rapid motion up to the last moment, but checking her speed very considerably before she reached the hole. Some intervening branches prevented us from seeing just how she entered it. Approaching the tree quietly I took a position which commanded a good view of the hole when my companion struck the base of the trunk lightly with his paddle. The blow was immediately followed by a scratching sound, and the next instant the Whistler shot out over our heads. Although I was watching the hole intently I did not see her leave it. She seemed, indeed, to burst forth at nearly full speed and I was half inclined to believe that she began her flight within the trunk. It seemed incredible that so heavy and clumsy a bird could emerge from such a place so adroitly and get under headway so quickly. Not that this particular hole was exceptionally small. On the contrary it was of rather generous size. Its shape and position are illustrated by a photograph which I took of the tree.

June 7. Yesterday at 3 P. M. Watrous examined the Whistler's nest found May 31. Several of the eggs were chipped. This

evening, just before sunset, he found all but two hatched and the nest filled with the pretty ducklings. The old bird was sitting on both occasions. To-night she returned and reëntered the hole before Watrous had paddled one hundred yards from the tree.

June 8. I visited the Whistler's nest shortly before daybreak this morning, approaching it with great caution. The old bird was absent and at first I feared that she had removed her young during the night, but on looking into the hole I was delighted to find them still there, huddled closely together in a circle, and shivering a little, for the air was keen. There were, however, only *six* of them with the two eggs still unhatched. What can have become of the remaining three eggs or young? Watrous tells me that he did not count the eggs on the 6th, nor the young last evening, but he is very certain that none of the eggs were missing on the former occasion, for the nest seemed to be full of them, and the absence of as many as three would have left a gap that he could scarcely have failed to notice. He is less sure that there were more than six young and two eggs last night.

Feeling confident that the young would leave the nest sometime during the day, I determined to see, if possible, how they would accomplish it. Accordingly after examining the nest, I concealed my boat about thirty yards from the tree and stretching myself at full length on the bottom, with my head raised just enough to enable me to look over the gunwale, remained there for nearly two hours. Nothing of interest happened until 5.10, when a female Whistler came from the direction of the Megalloway and without any preliminary circling dropped into the water within a few yards of the nest tree. After floating motionless for about two minutes with head and neck erect, evidently watching and listening intently, she flew directly to the hole and alighting on its edge, perched there for an instant, flapping her wings a little to maintain her balance. She then popped in, throwing up her spread tail just as her body disappeared, much as a Duck does when diving. I saw nothing more of her during the next hour, but soon after she entered the nest two other female Whistlers flew over and around me several times and one of them finally alighted on the water and swam to the base of the stub, looking up at the hole intently as if she, too, had some interest in it. On

several occasions within the past few days we have seen three or four Whistlers hanging about this nest. These facts lead me to suspect that they have been taking turns at incubating the eggs and that one of them may have taken away the three missing young.

At 6.15 I returned to the house-boat for breakfast and Gilbert took my place. It was arranged that he should shout if the Whistler began taking out her young while I was away. I heard his signal just as I was preparing to go back and when I rejoined him found that I was too late. This is his account of what happened during my absence:—

“At 6.45 the old Duck appeared at the entrance to the nest, where she sat for five minutes moving her head continually and looking about in every direction included within her field of vision; then she sank back out of sight, reappearing at the end of a minute and looking about as before for another five minutes. At the end of this second period of observation she flew down to the water and swam round the stub three times, clucking and calling. On completing the third round she stopped directly under the hole and gave a single loud cluck or call, when the ducklings began scrambling up to the entrance and dropping down to the water in such quick succession as to fall on top of one another. They literally *poured* out of the nest much as shot would fall from one's hand. One or two hesitated or paused for an instant on reaching the mouth of the hole but the greater number toppled out over the edge as soon as they appeared. All used their tiny wings freely, beating them continuously as they descended. They did not seem to strike the water with much force.

“While this was going on the old Duck sat motionless on the water looking up at the nest. When the last duckling dropped at her side she at once swam off at the head of the brood, quickly disappearing in a flooded thicket a few rods away.”

In this connection it may be well to dwell for a moment on some of the statements which have been made by writers as to the manner in which the young of tree-nesting Ducks leave the nest. Dresser affirms (*Birds of Europe*, VI, p. 600) that the young of the European Golden-eye “are carried by the female in

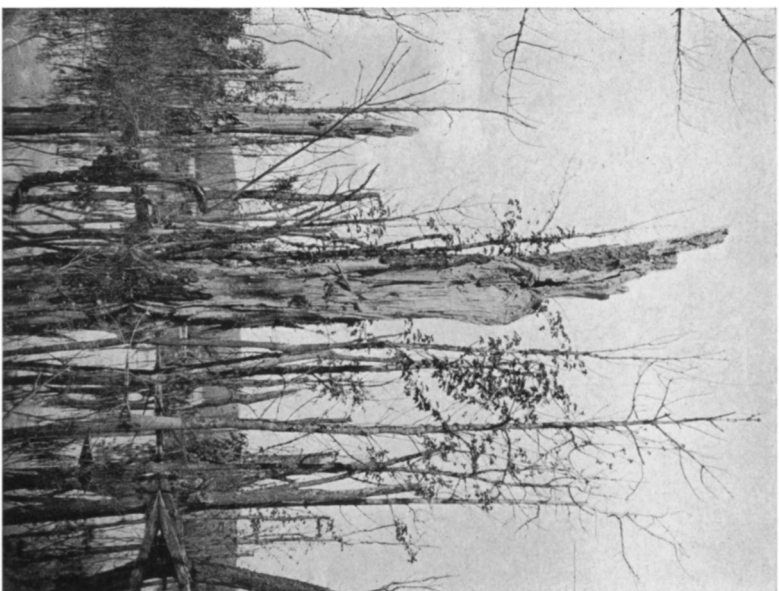


FIG. 1. WHISTLER'S NEST WITH NARROW ENTRANCE.



FIG. 2. WHISTLER'S NEST WITH ROUND ENTRANCE.

her beak down to the ground or to the water, one after another being taken down until the whole brood is taken in safety from the elevated nesting place; and I have been assured by the peasants [of Lapland and Finland] that this always takes place in the dead of the night."

Wilson was told by a person who lived within twenty or thirty yards of a tree in which a pair of Wood Ducks had nested for four successive years that "he had seen the female, the spring preceding, carry down thirteen young, one by one, in less than ten minutes. She caught them in her bill by the wing or back of the neck, and landed them safely at the foot of the tree, whence she afterward led them to the water."

Audubon, in his justly celebrated account of the Wood Duck — one of the best and most complete bird biographies that has ever been written — says: "If the nest is placed immediately over the water, the young, the moment they are hatched, scramble to the mouth of the hole, launch into the air with their little wings and their feet spread out, and drop into their favorite element; but whenever their birthplace is at some distance from it, the mother carries them to it one by one in her bill, holding them so as not to injure their yet tender frame. On several occasions, however, when the hole was thirty, forty, or more yards from a bayou or other piece of water, I observed that the mother suffered the young to fall on the grasses and dried leaves beneath the tree, and afterwards led them directly to the nearest edge of the next pool or creek." (Birds of America, 1843, Vol. VI, p. 273.)

Mr. Fred Mather has contributed the following account of how young Wood Ducks, bred in captivity, leave the nest: "Some writers claim that the mother takes them in her bill and others say that she carries them on her back. I had a string of pens back of my house; a pair in each, for they are better to be separated, and usually I found the mother and her brood on the water in the morning; but on two occasions I saw them leave the nest. The mother went first to the pool and called; she had brooded them for twenty-four hours or more, and they were strong. Then one after another the little things climbed out of the box and tumbled to the ground, or to the water.

"They had to climb 4 to 6 in. of plain board, but they did it.

I have seen them climb a 10 in. base board and go through 1 in. poultry netting when alarmed. They weigh nothing worth mentioning, and they have claws as sharp as cambric needles. They have pricked my hands until they bled when pinioning them at eight weeks old. I can easily believe that they can climb up a hollow tree and drop 20 ft. into the grass without injury. What need of such sharp claws and climbing ability if not for leaving the nest?" (Forest and Stream, Vol. LII, March 18, 1899, p. 205.)

Audubon's assertion that the female Wood Duck occasionally carries her young in her bill is so brief and guarded in comparison with the remainder of the vividly written paragraph in which it occurs as to suggest that it may not have rested on his personal experience, while Wilson's account was confessedly, and Dresser's quite evidently, taken at second hand and on the evidence of obscure and untrained observers. It is by no means impossible, of course, that tree-nesting Ducks occasionally take their broods to the water in the manner described by these and other writers, but if this be so the fact remains to be definitely established.

During my first visit to the Whistler's nest this morning I removed one of the young and took it with me to the house-boat, intending to return it after breakfast. The sudden departure of the mother with the remainder of her brood frustrated this plan and I kept the pretty little creature for two days, glad of the opportunity to try a few experiments with a wild Duck which had never seen water. I first put it on the deck where it ran about freely, standing and moving in a nearly erect position, lying prone with half extended wings when tired. It frequently called *peep-peep-peep-peep-peep* in shrill, piping tones, much like a young Turkey. It did not appear to be either shy or apprehensive, but, like many young birds, it was exceedingly stubborn and wilful, giving me the greatest trouble to photograph it, absolutely refusing to remain where I posed it, although it would settle quietly enough almost anywhere else. I next put a shallow pan filled with water near it. It ran back and forth through the pan many times without taking the least apparent notice of the water.

Shortly after this it was placed suddenly but gently in a tub filled to the brim with water. For at least a minute it remained

floating in one spot, looking about with evident bewilderment, but seemingly without fear. Its feet and legs hung loosely down and were occasionally twitched slightly. Presently it began using them as paddles, slowly and hesitatingly at first, afterwards more confidently, although more than an hour passed before it learned to swim at all fast or vigorously.

When it had mastered this accomplishment it tried climbing over the edges of the tub. We then removed about half the water, but the little bird went up the sides almost as nimbly as a mouse, clinging with its tiny claws to the soft wet wood. By noon it had learned to leap ten or twelve inches straight upward either from the water or from the bottom of a box. The muscular power and vigor of its stout legs were indeed remarkable, and it seemed to get as firm resistance for an upward leap from the water as from the surface of a board. One of the first things it did on being placed in the tub was to begin picking up various small objects such as bits of bark or weed which were floating in the water. It apparently swallowed some of these fragments, but we were unable to find any food which it seemed to relish, although it was quite willing to try everything we offered it. It ate a very little egg yolk, and some wriggling fragments of earth worms excited it greatly at first, but after getting them well down its throat it ejected them with evident disgust. While engaged with them it dropped a piece which began sinking slowly. It at once thrust its head beneath the water and tried to catch the descending morsel. This was the nearest approach to diving that we saw it make. It drank often and copiously and bathed freely, afterwards preening and drying its downy plumage with great patience and thoroughness, using its bill like an old bird.

The following morning our little Whistler was alive but feeble and depressed. As it would eat nothing that we had to offer, we took it to the flooded forest and putting it on a piece of floating driftwood near the foot of the tree in which it had been hatched, backed the boat off a few yards and left it at freedom. It stood erect and motionless for a minute or two looking about; then entering the water began swimming, at first slowly and in evident bewilderment. But very soon it gained confidence and struck out more boldly until at the end of a few minutes it was

darting hither and thither, skimming the surface as lightly as a fluff of thistle down and in courses as erratic as those of the lucky bugs whose gambols it disturbed. Now it sipped the water eagerly, next picked at a floating leaf or darted after some small aquatic insect. Every now and then it would raise the forward part of its body and flap its tiny wings in the manner of an old Duck. The floating sticks and rafts of dirt that covered a large part of the surface did not embarrass its progress in the least, for it crossed them either by running or by a succession of short, quick leaps as nimble as those of a small frog. Poor little waif ! It was pathetic to see it start off thus alone and unprotected on its perilous journey of life, rejoicing evidently in its freedom and the novelty of its surroundings, but quite unconscious of the dangers which lay before it. I could only hope that one or the other of the female Whistlers which we started from the water near the nest tree would adopt and care for it, and I was glad to see one of them fly back to the spot after we had departed.

ECOLOGY OF THE MARYLAND YELLOW-THROAT, AND ITS RELATIVES.

BY WILLIAM PALMER.

FOR MANY years I have known that two distinct forms of this common species (*Geothlypis trichas*) occurred in Virginia ; a small summer resident and a larger, better colored transient. Within a few years past I have found a third, a large, rich colored summer resident of the cypress and cane swamps of the southeastern part of the State. A study of considerable material and experience has led me to results which may throw more light on the distribution and evolution of the genus.

The genus *Geothlypis* has no characters peculiar to itself ; it is differentiated from its near relatives by a combination of characters each of slight importance. It contains about 28 forms, dis-